

I CLAIM:

1. A sound pickup method to be implemented using a microphone array that includes a plurality of microphones disposed in an array and spaced apart from each other, and a sound source tracking device that is disposed at determined distances relative to the microphones in the microphone array, said sound pickup method comprising:

a) operating the sound source tracking device to obtain distance and direction values of a target sound source relative to the sound source tracking device;

b) with reference to the determined distances of the sound source tracking device from the microphones in the microphone array, and the distance and direction values obtained in step a), determining nearest and farthest ones of the microphones in the microphone array relative to the target sound source;

c) determining appropriate time delays for the nearest one of the microphones according to the distance thereof from the farthest one of the microphones and for other ones of the microphones in the microphone array according to the distance of each of said other ones of the microphones from the nearest one of the microphones; and

d) processing signals generated by the microphones in the microphone array by introducing the corresponding time delays determined in step c) into the signals from

the microphones.

2. The sound pickup method as claimed in Claim 1, further comprising:

e) combining the signals processed in step d).

5 3. The sound pickup method as claimed in Claim 1, wherein, in step a), the distance and direction values are determined from size and position of an image of a body part of the target sound source captured by the sound source tracking device.

10 4. The sound pickup method as claimed in Claim 3, wherein the body part is a human face.

5. A sound pickup system comprising:

15 a microphone array that includes a plurality of microphones disposed in an array and spaced apart from each other;

a sound source tracking device that is disposed at determined distances relative to said microphones in said microphone array, and that is operable so as to obtain distance and direction values of a target sound source relative to said sound source tracking device, said sound source tracking device determining nearest and farthest ones of said microphones in said microphone array relative to the target sound source with reference to the determined distances of said sound source tracking device from said microphones in said microphone array, and the distance and direction values obtained by said sound source tracking device; and

20

25

a signal processing unit coupled to said microphone array and said sound source tracking device, said signal processing unit including a delay calculator for determining appropriate time delays for the nearest one of said microphones according to the distance thereof from the farthest one of said microphones and for other ones of said microphones in said microphone array according to the distance of each of said other ones of said microphones from the nearest one of said microphones, said signal processing unit further including a delay processor for processing signals generated by said microphones in said microphone array by introducing the corresponding time delays determined by said delay calculator into the signals from said microphones.

6. The sound pickup system as claimed in Claim 5, wherein said signal processing unit further includes an adder for combining the signals processed by said delay processor.

7. The sound pickup system as claimed in Claim 5, wherein said sound source tracking device includes an image capturing device and an image processing unit coupled to said image capturing device, said image processing unit determining the distance and direction values from size and position of an image of a body part of the target sound source captured by said image capturing device.

8. The sound pickup system as claimed in Claim 7, wherein the body part is a human face.

9. The sound pickup system as claimed in Claim 5, wherein said sound source tracking device includes one of an indoor locating system, a wireless network indoor
5 locating system, and a global satellite positioning system.